AIPHONE

92101 1198

Special Order Products

LAF-C LAF-CA

LAF-C Console Master Loudspeaker Intercom System

LAF-20C LAF-40C
LAF-20CA LAF-40CA

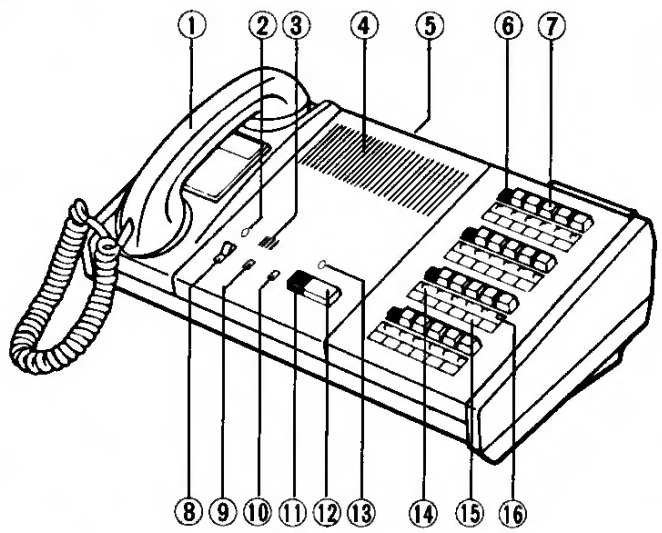
Type E

- INSTRUCTIONS -

The LAF-C Console Master system is a loudspeaker type, single talkpath open voice system. Multiple masters can be used, along with a large variety of sub station models to create a communication system tailored to the user's needs. Master stations are available in 20-and 40-station sizes, with or without a handset. For greater capacity, include a 20- or 40-station add-on selector. Any "LE-" or "LS-" series sub station can be used.
All Call and/or Background Music are optional features requiring additional equipment (BG-10C, PS-12F).

1 NAMES & FEATURES

LAF-20CA (pictured)



NAMES & FUNCTIONS:

1. Handset
2. Power indicator
3. Microphone
4. Speaker
5. Terminal Block
6. OFF button
7. Selector button
8. Power switch
9. Voice volume control
10. Call tone volume control
11. All Call button
12. TALK button
13. Occupied LED
14. OFF LED
15. Directory card
16. Station selector LED

FEATURES:

- Single or multi-master capability
- Commercial grade, durable master station for heavier usage
- Master stations available with our without a handset
- Single talkpath, with push-to-talk operation or handset at master, and hands free communication at sub station
- Large variety of sub stations available
  - Surface or flush mount, with or without privacy (LE-A, LE-AN, LE-B, LE-BN)
  - Weather resistant door stations (LE-D, LE-DA, LE-DL)
  - Vandal proof sub station (LS-NVP, LS-NVP-W (weatherized), SBX-DGV surface mt. box)
- Selective calling to sub stations, and master-to-master communication
- Subs call in with momentary tone and LED, remaining lit for approximately 20 seconds
- Optional All Call (additional equipment required) to call all stations simultaneously
- Equipment used for All Call also allows for background music to be heard through master and subs
- Master is desk or wall mountable, and LAF-20CA can be rack mounted with RMK-01 rack mount kit
- 20- and 40-call add-on selectors available, with LA-40AS rack mountable with RMK-02.

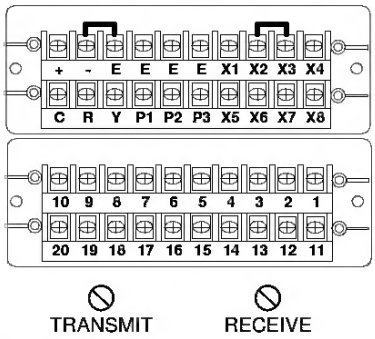
Downloaded from www.Manualslib.com manuals search engine

2 COMPONENTS & WIRING

Individual Components for System:

LAF-20C		20-call console-style master station
LAF-20CA		20-call console-style master station with handset
LAF-40C		40-call console-style master station
LAF-40CA		40-call console-style master station with handset
LA-20AS		20-call Add-on Selector
LA-40AS		40-call Add-on Selector
PS-12C		12V DC, 1A Power Supply for standard system (without All Call)
PS-12F		12V DC, 2.5A Power Supply for each BG-10C when All Call/Music is included (also powers intercom sys.)
LE-series		Any sub station with "LE-" prefix
LS-NVP	(-W)	Vandal proof sub station for LAF-C/CA system
SBX-NVP		Surface mount box for LS-NVP
SA-1		Surge Arrestor (1 per 2 wires being protected)

LAF-20C/CA terminal block



LAF-C TERMINAL DEFINITIONS:

+	Positive 12V DC
-	Negative
1~40	Station number, establishes communication to other master or sub
C	"CALL", for receiving a call from another master
E	Common communication
R	Control for Occupied light ("R" is grounded when system is occupied)
Y	All Call override control of station in use during All Call (9V DC when system is in All Call mode)
P1	All Call activation control (10V DC when All Call is activated)
P2, P3	Audio output for All Call initiation (Voice transmit from master initiating All Call)
X1~X8	Connection for add-on selector (Type E) Remove X2/X3 jumper when add-on selector is used.

JUMPERS:
In multi-master system, remove E/- jumper at master and sub stations.
When add-on selector is included, remove X2/X3 jumper.

INTERNAL CONTROLS:
CALL TONE VOL.: SW4, located inside unit under select switch panel, controls call tone volume. Level is set at max. from factory. Change position to lower call tone volume.
VOX. SENSITIVITY: Potentiometer is located inside unit behind handset. Adjust for sensitivity of VOX circuit.
SW5 SWITCH: In "A" position from factory, which mutes call tone from sub while system is occupied.
"B" position allows call tone to be heard while system is occupied.

WIRING & INSTALLATION:

Before Installation:

- Make sure you have the proper power supply(ies) and all necessary and compatible equipment for the system.
- All Call and/or background music are optional features which require additional equipment. See notes below.
- Lay out your system in advance, assigning station numbers for all sub station locations.
- Surge protection for the intercom equipment is strongly recommended. Add SA-1 surge arrestors for the power supply, plus one per two wires connected to the master station. See diagram on page 3.

Wire:

- Shielded wire is recommended. Use the proper gauge for the distance being run.
- Wiring between masters must be a multi-conductor cable. If more than one cable is used to connect masters, the "E", "C", and number terminal wires must be in the same jacketed cable. If necessary, run multiple "E" wires, one in each cable.

Wiring Method:

- Run intercom cables at least 20" away from all AC wiring, fluorescent lights, dimmer switches, and other electrical or electronic devices. Wiring can cross AC wires at 90 degrees.
- Sub stations may be homerun to the nearest master station, or daisy-chained. If daisy-chained, include 2 common wires plus one individual wire per station on the run.
- In a SINGLE MASTER SYSTEM ONLY: Subs can be wired with 2 conductors homerun. Jumpers between "E" and "-" must be attached on all subs and at the master.

Intercom Locations:

- Do not install intercoms near dimmer or light switches, or other electrical wall devices.
- To prevent feedback, do not place sub stations back-to-back on a common wall.

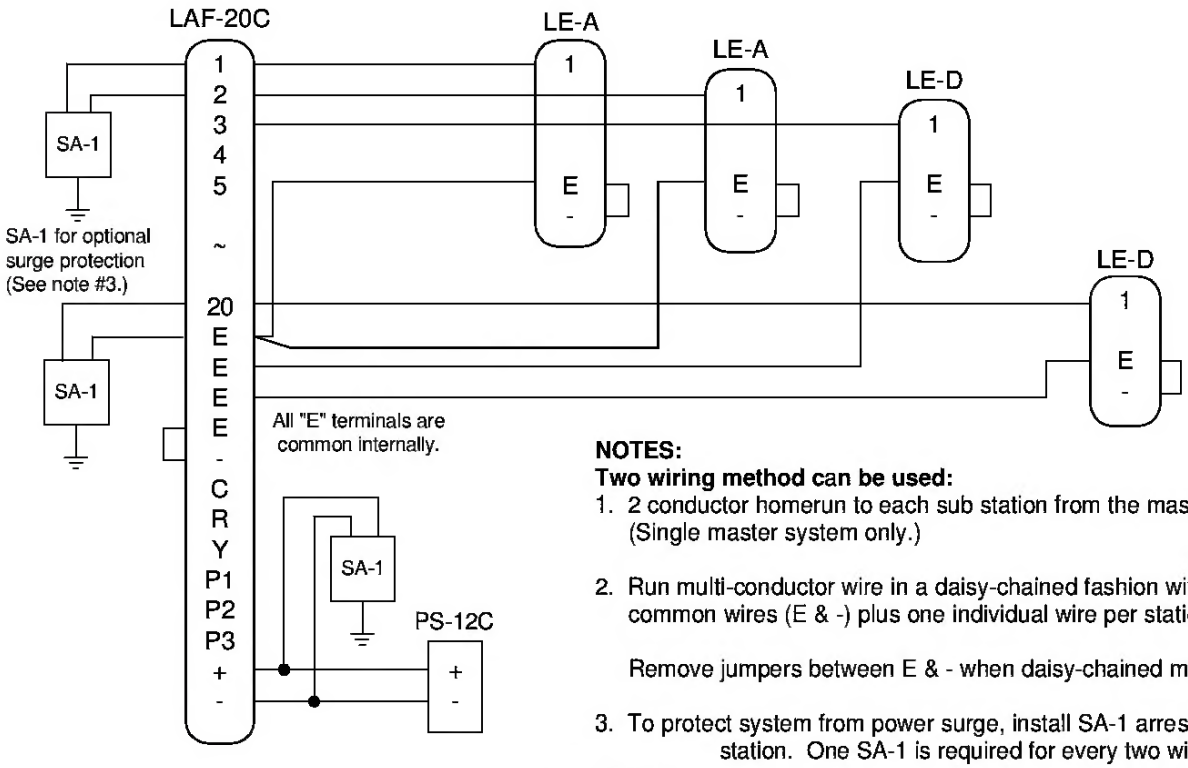
All Call and Background Music:

- The BG-10C adaptor and PS-12F power supply are required for each group of 11 stations to receive All Call and music. This equipment should be installed in an equipment room or in a cabinet. Capacitors (NP-25V) are required for each sub station on the system. See wiring diagram on page 5 for installation information.

Downloaded from www.Manualslib.com manuals search engine

3 WIRING DIAGRAMS

3a. SINGLE MASTER SYSTEM, NO ALL CALL

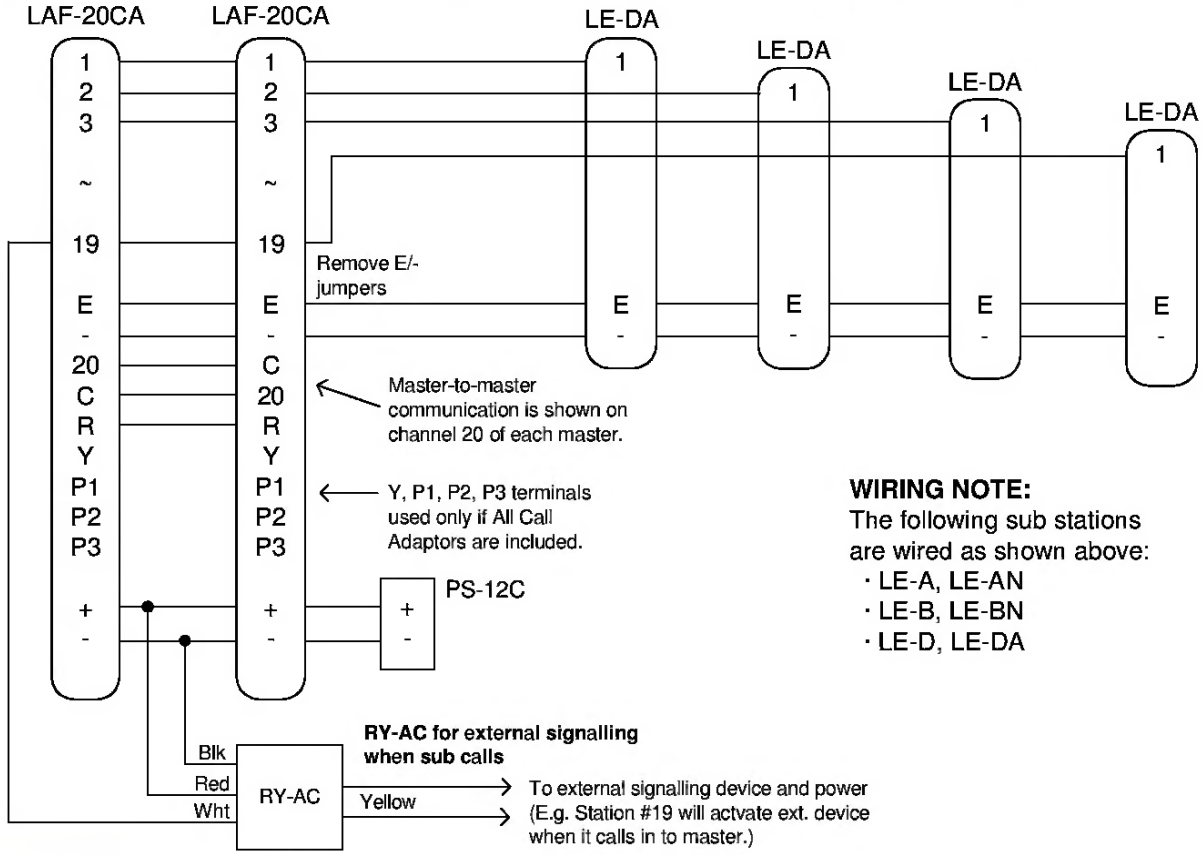


NOTES:
Two wiring method can be used:

1. 2 conductor homerun to each sub station from the master. (Single master system only.)
2. Run multi-conductor wire in a daisy-chained fashion with 2 common wires (E & -) plus one individual wire per station on the run.

   Remove jumpers between E & - when daisy-chained method is used.
3. To protect system from power surge, install SA-1 arrestors at master station. One SA-1 is required for every two wires connected to master.

3b. DUAL MASTER SYSTEM WITH MASTER-TO-MASTER COMMUNICATION

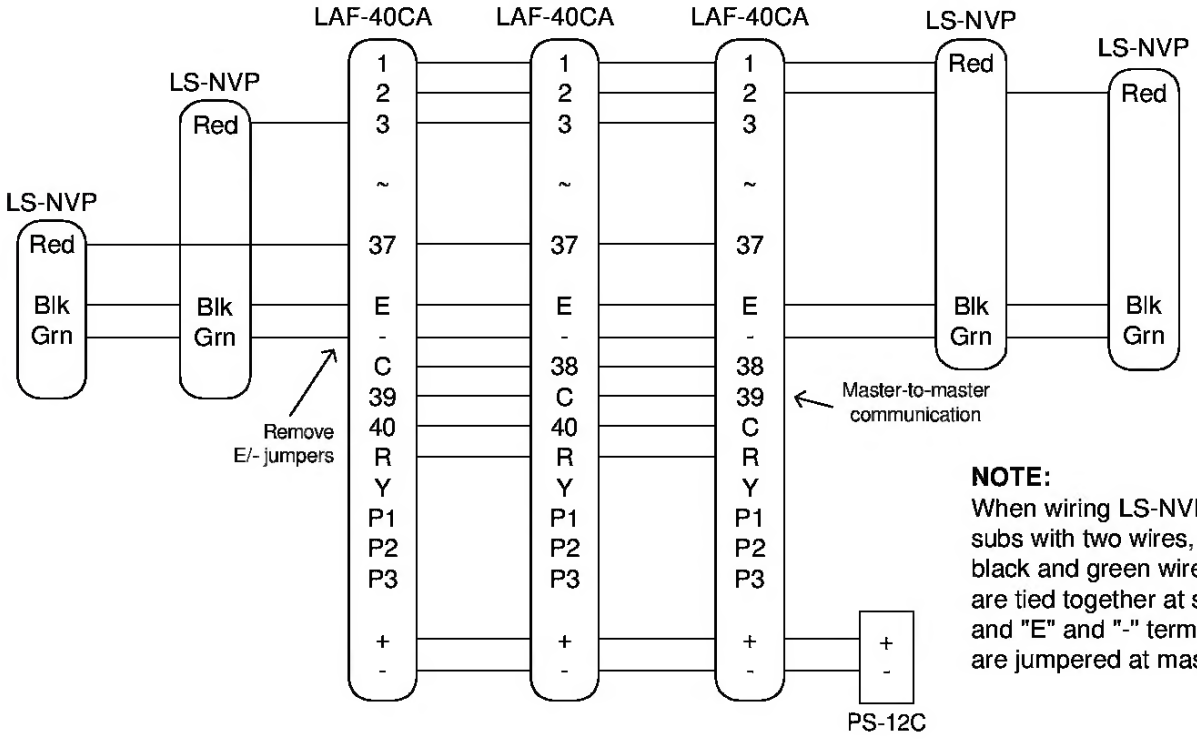


WIRING NOTE:
The following sub stations are wired as shown above:

- LE-A, LE-AN
- LE-B, LE-BN
- LE-D, LE-DA

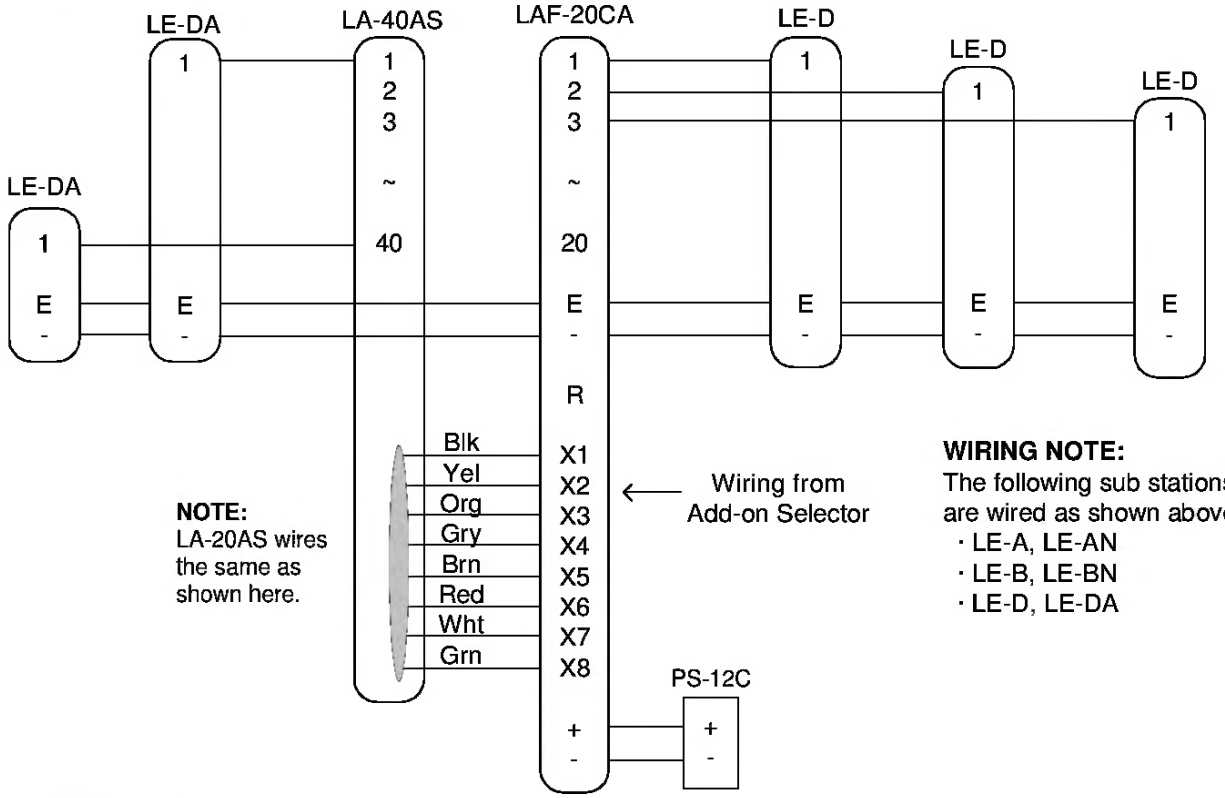
Downloaded from www.Manualslib.com manuals search engine

3c. THREE MASTER STATIONS WITH SUBS WIRED TO DIFFERENT MASTERS



NOTE:
When wiring LS-NVP subs with two wires, black and green wires are tied together at sub, and "E" and "-" terminals are jumpered at master.

3d. MASTER STATION WITH ADD-ON SELECTOR



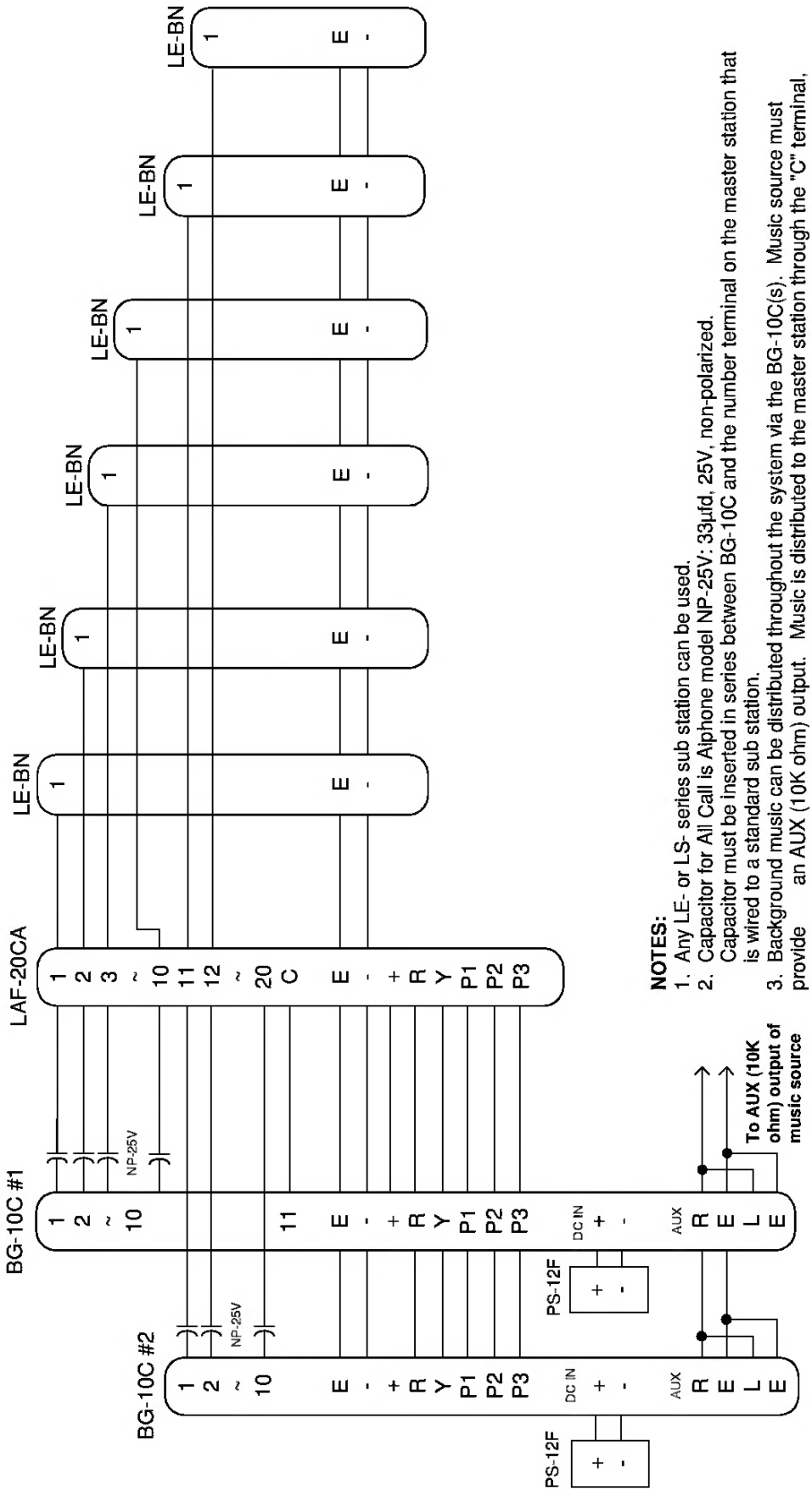
NOTE:
LA-20AS wires the same as shown here.

WIRING NOTE:
The following sub stations are wired as shown above:

- LE-A, LE-AN
- LE-B, LE-BN
- LE-D, LE-DA

Downloaded from www.Manualslib.com manuals search engine

3e. SINGLE MASTER SYSTEM WITH ALL CALL



NOTES:

1. Any LE- or LS- series sub station can be used.
2. Capacitor for All Call is Aiphone model NP-25V: 33µfd, 25V, non-polarized. Capacitor must be inserted in series between BG-10C and the number terminal on the master station that is wired to a standard sub station.
3. Background music can be distributed throughout the system via the BG-10C(s). Music source must provide an AUX (10K ohm) output. Music is distributed to the master station through the "C" terminal, showed wired to "11" above.
4. Each BG-10C can provide music and/or All Call to as many as 11 sub or master stations. Include as many adaptors and power supplies as necessary to provide enough outputs to the stations in the system.
5. Do not connect "+" terminal between multiple BG-10C adaptors.

Downloaded from www.Manualslib.com manuals search engine

4 OPERATIONS & SPECIFICATIONS

OPERATIONS:

*** POWER SWITCH MUST BE ON FOR THE SYSTEM TO BE OPERATIONAL.**

• Receiving a call from a sub station:

1. Sub station calls in with mono-electronic tone, heard as long as call button at sub is depressed.
2. LED light corresponding to calling station will light at master, staying on approximately 20 seconds.
3. Depress station button with lit LED.
4. Press TALK button to speak, and release to listen. With handset model (LAF-CA), speak to sub station privately with voice actuated (VOX) handset. TALK button is also functional on LAF-CA models.
5. Press OFF button to the left of the station selector button when the call is concluded.

• Calling a sub or master station:

1. Depress station number of the location you wish to call.
2. Press TALK to speak, and release to hear reply, or use handset.
3. If you wish to send a pre-announce tone to the called station, press the TALK and ALL CALL buttons simultaneously. A mono-electronic tone will be heard at the called station.
4. Press OFF button to the left of the station selector button when the call is concluded.

• Receiving a call from another master station:

1. When one master calls another master, no station LEDs light up, and the responding master answers back hands free. The calling master uses the TALK button to speak.
2. The calling master can use the handset, but the responding master must speak hands free.
3. The "occupied lamp" will be on while the initiating master has a station selected.
4. The responding master should not press any buttons to respond to another master's call.

• Initiating an ALL CALL from the master station, and features of the BG-10C:

1. Press and hold the black ALL CALL button, then make an announcement.
2. To conclude, simply release the button.
3. All Call is a one way outgoing announcement only. If a station wishes to respond, they must press their call button, and the master station can then answer the call as described above.
4. If background music is included, the music will be heard on the system while it is not occupied. When any master station selects a station to place or answer a call, the music will be muted throughout the entire system.
5. If a door station is wired to the BG-10C to produce a chime, a 4-stroke chime will be heard through the stations selected to receive the chime (switches under plate on BG-10C). A call from a door station can only be answered by a master station.

SPECIFICATIONS:

Power Source:	12V DC at master. Use PS-12C, or PS-12F when BG-10C(s) are included (1 PS-12F per BG-10C)
Communication Output:	800mW at 20 ohms (receive); 500mW at 20 ohms (transmit)
Communication:	Push-to-talk, release-to-listen (TALK button), or VOX handset at master. Hands free at sub station.
Calling:	Master to sub or other master: By voice (TALK) or tone (TALK & ALL CALL simult.) Sub to master: Call button on sub activates tone and LED at master, remaining lit for approximately 20 seconds.
Wiring:	2 conductors homerun to sub station (1-Master system only), 3-conductor, or loop multi-conductor with 2 common + 1 individual wire per sub station on wire run. **Shielded cable is recommended.** Use Aiphone #822202, 2 cond. 22AWG; #821802, 2 cond. 18AWG or #822203, 3 cond. 22AWG; #822206, 6 cond. 22AWG. LAF-C to ea. BG-10C: Aiphone #822220, 20 cond. 22AWG.
Wiring Distance:	650' with 22AWG; 1,600' with 18AWG.
Dimensions: (H x W x D)	LAF-20C: 10-1/4" x 13-1/2" x 5-1/2". LAF-20CA: 10-1/4" x 17-3/4" x 5-1/2" LAF-40C: 10-1/4" x 19-1/2" x 5-1/2". LAF-40CA: 10-1/4" x 23-1/2" x 5-1/2" LA-20AS: 10-1/4" x 7" x 5-1/2". LA-40AS: 10-1/4" x 12-7/8" x 5-1/2".

Downloaded from www.Manualslib.com manuals search engine

5 TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
1. No call tone or LED when sub calls master.	1. Make sure jumper is installed between E & - terminals at the master and all sub stations (in 2-wire configuration).
2. Call tone works, but no communication, or communication works, but no call tone.	2. Same as #1 in 2-wire system. In 3 wire system, 1 & E are for communication, and 1 & - are for call-in. Check continuity and connection of wires.
3. Call tone is too loud or too quiet.	3. Call tone volume control is located on main PC board under select switch panel (white 3-pos. switch). Level is set to maximum. Move to mid or low position.
4. Master stations cannot call each other.	4. The "C" terminal on the master station means "CALL", and provides master-to-master communication. Make sure the "C" of one master is connected to a designated station # on another master.
5. LED lights don't light up when calling master-to-master.	5. Station LEDs only light when a sub station calls. Responding master answers hands free, therefore not having to select a station.
6. Occupied light is always on.	6. Make sure all black OFF buttons on master(s) are off (pressed down). Check "R" wire for short to ground. If occupied light remains lit with "R" wire disconnected from master, internal damage has occured, and the unit must be sent in for repair.
7. When subs call in, multiple LEDs light up.	7. Make sure station number wires aren't shorted together. Remove all jumpers between E & - in multi-master or 3-wire system. Test master by taking wires off # terminals, then momentarily shorting # terminal to - (neg). If more than one light comes on, internal damage has occured, and the master must be repaired.
8. All Call doesn't work.	8. All Call is an optional feature requiring a BG-10C and PS-12F for every 10-11 stations in the system. Make sure adaptors are wired properly. See diagram #3e.
9. All call doesn't work, but adaptors are included.	9. Check connection of P1, P2, P3 terminals between master and BG-10C's. P1 should read at least 10V DC when All Call button is pressed. Voice is carried on P2, P3 wires.
10. When All Call is made, all station LEDs light up.	10. If single-call sub stations are used, NP-25V capacitors must be installed as shown on diagram #3e.
11. Feedback is heard between intercom stations in adjacent rooms.	11. Intercom stations should not be mounted back-to-back on a common wall. Separate them by at least two feet, or on separate walls if possible. Adjust voice volume control to eliminate feedback.
12. System has AC hum when listening to another station from a master station.	12. Intercom wiring must be at least 20" away from any AC wiring, fluorescent lights dimmer switches, or other AC devices. Cross at 90 degrees when necessary. If shielded wire was used, tie all shields together and ground at one end to an earth ground. If noise persists, isolate source of noise and separate the intercom station and wiring from the source.

Downloaded from www.Manualslib.com manuals search engine

6 PRECAUTIONS & WARRANTY

CAUTION

* Do not connect any AC wires to any terminal on any unit, as fire or unit damage may occur. Connect only specified power source on +, - terminals.

* Do not install more or different power sources than specified for the system.

* Do not attempt to install or connect wires on LAF-C system while the system's power supply is plugged in.

* LAF-C masters and related equipment, unless specified as "weather resistant", are designed for indoor use only. Door stations (LE-D, LE-DA, LE-DL) may be installed outdoors.

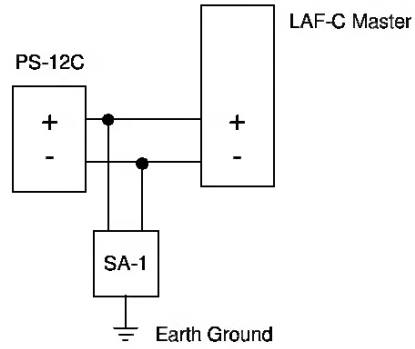
IMPORTANT

* There is no need to disassemble the equipment for installation. Call tone volume and handset vox sensitivity adjustments are inside the master station, and are the only controls to be accessed inside the unit. Do not access the PC boards inside the units unless properly qualified.

* Any other manufacturer's products installed with the system (power supply, external signalling device, etc.) are not covered under Aiphone's warranty.

* Do not mount LAF-C equipment in the following places, as it may cause the system to malfunction:
  - High or extreme cold temperature areas: under direct sunlight, near equipment that varies in temperature, in front of air conditioner, inside a refrigerated area, etc.
  - Places subject to moisture or humidity extremes.
  - Places subject to environmental conditions, such as dust, oil, chemicals, salt, etc.
* LAF-C units are electronic devices, which must not be subjected to water or any other liquid.

* Severe weather conditions, such as lightning storms, may cause damage to LAF-C equipment. We recommend that power surge protection be installed to minimize potential component level damage.
  - Install the SA-1 surge arrestor as shown to protect the power supply from a surge.
  - Additional SA-1 surge arrestors should be installed on all communication lines (one SA-1 for every two wires connected to master.) See diagram #3a.



WARRANTY

Aiphone warrants its products to be free from defects of material and workmanship under normal use and service for a period of one year after delivery to the ultimate user and will repair free of charge or replace at no charge, should it become defective upon which examination shall disclose to be defective and under warranty. Aiphone reserves unto itself the sole right to make the final decision whether there is a defect in materials and/or workmanship; and whether or not the product is within the warranty.

This warranty shall not apply to any Aiphone product that has been subjected to misuse, neglect, accident, or to use in violation of instructions furnished, nor extended to units which have been repaired or altered outside of the factory. This warranty covers bench repairs only, and any repairs must be made at the shop or place designated in writing by Aiphone.

Aiphone will not be responsible for any costs incurred involving on-site service calls.

Aiphone Communication Systems
1700 130th Ave. N.E.
Bellevue, WA 98005
(425) 455-0510
FAX (425) 455-0071

Toll Free Technical Support
1-800-692-0200
TOLL FREE FAX LINE:
1-800-832-3765
E-Mail: tech-serv@aiphone.com

Downloaded from www.Manualslib.com manuals search engine